

What is claimed is:

1. A multilayer circuit board having a multilayer structure of a plurality of printed wiring boards including at least a first printed wiring board and a second printed wiring board, wherein each of said first printed wiring board and said second printed wiring board includes a metal core substrate having a first major surface and a second major surface which are opposite and parallel to each other and each of which major surfaces is covered with an electrically insulating layer, a conductive printed wiring layer formed on the surface of said electrically insulating layer, a solder resist layer covering the surface of said conductive printed wiring layer, and local bonding means for mechanically bonding together a pair of the printed wiring boards which are adjacent to each other so as to provide an air gap of a predetermined spacing value between these adjacent printed wiring boards in said multilayer structure,

wherein said local bonding means includes a plurality of metal projections of a predetermined height, said projections being formed on said first major surface and/or second major surface so as to be integral with said metal core substrate and to provide an air gap between the adjacent printed wiring boards in said multilayer structure,

wherein said conductive printed wiring layer formed on said electrically insulating layer includes a plurality of wiring lines on said first major surface or said second major surface of said metal core substrate, and

wherein said solder resist layer includes a local opening for exposing metal surface at a region selected on the surface of said local bonding means.

2. A multilayer circuit board according to claim 1, wherein said metal core substrate comprises at least one aperture preliminarily formed through and between said first and second major surfaces to form a through-hole, and wherein said conductive printed wiring layer includes a through-hole conductive portion on an inner surface of said aperture.

3. A multilayer circuit board according to claim 1, wherein each of said

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metal projections includes an exposed metal top.

4. A multilayer circuit board according to claim 1, wherein each of said metal projections includes an exposed metal surface layer formed by plating said metal core substrate with a metal.

5. A multilayer circuit board according to claim 1, wherein each of said metal projections has a top covered with an electrically insulating layer on which an exposed metal surface layer is formed by plating a metal.

6. A multilayer circuit board according to claim 5, wherein said exposed metal surface layer constitutes a part of said conductive printed wiring layer.

7. A multilayer circuit board according to claim 1, wherein each of said metal projections includes a protrusion formed from said metal core substrate by press forming.

8. A multilayer circuit board according to claim 1, wherein each of said metal projections includes a protrusion left after an etching treatment of said metal core substrate.

9. A multilayer circuit board according to claim 1, wherein the second major surface of said first printed wiring board and the first major surface of said second printed wiring board face each other through an air gap in said multilayer structure, and wherein said local bonding means includes a combination of a metal projection formed on one of said second major surface of said first printed wiring board and said first major surface of said second printed wiring board and a local exposed metal portion provided on the other of said second major surface of said first printed wiring board and said first major surface of said second printed wiring board at a position in alignment with said metal projection.

10. A multilayer circuit board according to claim 9, wherein said exposed metal portion is formed from a part of a surface of said metal core substrate or of said conductive printed wiring layer.